

## ABSTRACT

A free curved surface precision machining tool for precision-machining a surface to be machined with the lower end in contact therewith by rotation around an axis  $x$ . It includes a drum-shaped tool having a rotation axis  $x$  orthogonal to the axis  $z$  and rotationally driven around the rotation axis  $x$ . This drum-shaped tool has a convex machining surface in the form of an arcuate rotary body obtained by rotating an arc of a radius  $r$  with the center at the intersection  $O$  between the axis  $z$  and the rotation axis  $x$  around the rotation axis  $x$ . The convex machining surface contacts the surface to be machined to precision-machine the latter, while the convex machining surface is rotated around the orthogonal axis  $x$  so as to disperse the machining position of the convex machining surface.